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| EXAMINER | |
|---|---|
| CHAKRABORTY, SUPRATIK | |
| **ART UNIT** | **PAPER NUMBER** |
| 2628 | |

DATE MAILED: 04/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/766,515 | MULLINS ET AL. | |
| | Examiner | Art Unit | |
| | Supratik Chakraborty | 2628 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) 1-21 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-21 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 9/23/2005.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Objections*

Claim 16 is objected to because of the following informalities: claim 16 claims dependency upon itself. For use in this action, claim 16 is interpreted to be dependent upon claim 10. Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1 – 3, 5 – 12, and 14 – 21 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,731,819 to Gagné et al.**

**Regarding Claim 1**, Gagné et al. teaches of deforming graphic objects to simulate the effects of motion so that the graphic objects appear less stiff. Column 6, lines 41 - 53, states that the QSTRETCH module may perform deformations on parent-child objects together or individually as selected by a user which corresponds to the claimed three-dimensional object comprising the first 3D object and the second 3D object. Figure 7 shows a static cube with no deformations with which to compare the simulated object deformation functions of the invention. It is inherent that the object in Figure 7 contains an associated first volume relating to its static state that corresponds to the claimed first

volume. Additionally, a child object of the object in Figure 7 will also inherently have an associated first volume relating to its static state. Column 5, lines 56 - 62, teaches of providing a pseudo motion vector to change the shape of a static object. Column 7, lines 45 - 61, describes two control icons that are applied to an object selected by the QSTRETCH module for the purpose of modifying the rotational and linear velocity of the object that corresponds to the claimed control indicator. Lines 56 - 58 state, "Similarly, the arrow tip icon can be adjusted with the mouse to set the amplitude of the linear velocity." This corresponds to the claimed receiving an offset for the control indicator in response to user input with a user input device. As stated in Column 12, lines 48 - 54, "Stretch deformation simulates the manner in which the inertia of a moving object contributes to elongate the object. When an object is pulled in one direction (causing a linear velocity or acceleration of the object), it will often elongate in this direction. If the object is pushed, then it will elongate in the perpendicular directions. This deformation corresponds to the well-known "squash and stretch" effect." Thus, the control icon as manipulated by a user through an input device receives an offset for the linear velocity of a selected object. Column 12, lines 62 - 67, and Column 13, lines 1 - 4, describe stretching an object due to an offset of its linear motion with a positive sensitivity factor, thus relating to the object being pulled in the direction of motion, "The stretch deformation of an object with volume conservation produced by its linear velocity or acceleration is exhibited both in the direction of the kinetic vector and in the plane perpendicular to this vector. As can be seen in Figures 7 and 12 - 15, the volume of the modified objects is determined in response to whether the volume of the static objects is

to be or not to be preserved. By choosing to keep the volume constant in the invention of Gagné et al. that corresponds to the claimed limitation.

The reference teaches about the selective deformation of an object without deforming the parent object that corresponds to the claimed limitation of determining a constraint to a third object without applying the same constraint to the first and the second object.

**Regarding Claim 2**, Gagné et al teach about increasing the dimension of the object in one direction (stretching) is coupled with a decrease of the dimension in orthogonal directions (shrinking) so that the volume of the object is kept constant. In contrast, deformation without volume conservation (i.e., free volume) occurs either in the kinetic vector direction or in the plane perpendicular to this vector." Additionally, Column 14, lines 13 - 21, describes shrinking an object in the direction of linear motion in response to a negative sensitivity factor, thus corresponding to the object being pushed in the direction of motion. "If the sensitivity factor is negative, the object is shrunk in the direction of the kinetic vector, and is stretched in the plane perpendicular to this vector. FIG. 13 shows how the negative sensitivity changes the result for the stretch deformation from that shown for a positive sensitivity in FIG. 12. As is true when the sensitivity is positive, the scaling factors for the two directions perpendicular to the kinetic vector will be equal when the sensitivity is negative, but will be fixed to 1." Thus, the first and second objects may be scaled such that they are either shrunk or stretched in the direction of linear motion. Columns 13 and 14 further describe the equations for modifying the object in the direction of motion as well as the dimensions orthogonal to

the direction of motion. Therefore, as stated above, the first and second three-dimensional objects are scaled in a first dimension in relation to a linear motion offset and whether the volume of the object is to be or not to be kept constant. The second and third dimensions of the objects are additionally modified in relation to the sensitivity factor, linear motion offset, and whether the volume of the modified objects is to be or not to be kept constant. That corresponds to the claimed limitation

**Regarding Claim 4**, Gagné et al. teach about the modified objects where it is inherent that the modified objects will have an associated second volume in relation to their modified size. As can be seen in Figures 7 and 12 - 15, the volume of the modified objects is determined in response to whether the volume of the static objects is to be or not to be preserved. By choosing to keep the volume constant in the invention of Gagné et al., the first and second associated volumes will be substantially similar in that they are equal.

**In regard to claims 8 and 9**, Column 8, lines 62 - 67, and Column 9, lines 1 – 12, state that the rendered objects in which the object deformations are performed appear in successive frames. Additionally, Column 9, lines 32 – 38, states, "Once the user has determined the QSTRETCH setup parameters that will be used to define a deformed object as described above, the system can determine the effect offsets for each of the control vertices of the object and the data can be stored on the hard drive or other nonvolatile storage device to facilitate rendering of the deformed object during the

animation." Column 5, lines 48 – 51, further states, "Once an object has been deformed by the QSTRETCH module, it is output in scene data 30 as a deformed object 40, which can be shown on display 18 and may be stored on hard drive 16." Thus, the modified objects are rendered as deformed objects that can be stored in memory and shown on a display as part of an animation frame.

**In regard to claims 10 – 12 and 14 – 16**, Column 5, lines 9 – 18, state, "The preferred embodiment of the present invention was developed as a module included in a 3D graphics program used for creating and editing animations. The module is referred to by the title QUICKSTRETCH.TM., which is often shortened to QSTRETCH.TM.. To run the 3D graphics program, machine instructions comprising the program, which are stored on hard drive 16, are loaded into RAM within memory 21, for execution by CPU 23. These machine instructions are executed by CPU 23, causing it to implement the functions described below." Therefore, the functionality as described above in regard to claims 1 – 3, 5 – 7, 8, and 9 are implemented by the system described by Gagné et al. in response to the machine instructions comprising the 3D graphics program. Furthermore, Column 4, lines 48 – 57, state that a keyboard or mouse may be used by a user to input instructions and/or data in applications running on the system.

**In regard to claims 17, 19, and 21**, Gagné et al. discloses in Column 5, lines 9 – 24, that the 3D graphics program, as described above, is used for creating and editing animations, thus corresponding to a graphical user interface wherein a user may

interact with displayed objects for performing stretch, flex, and yield deformations. Figure 6 further shows a user interface for performing deformations on a selected object. As described in regard to claim 1, Gagné et al. teaches of creating a control icon with which a user may manipulate the linear motion of an object, thus automatically scaling the object in the direction of motion and the orthogonal dimensions in relation to the motion according to the motion offset, sensitivity factor, and whether the volume of the modified object is to be or not to be kept constant. Column 6, lines 41 - 53, additionally states that the QSTRETCH module may perform deformations on parent-child objects together or individually as selected by a user. Therefore, the control icon for the motion offset may be associated with one or more objects in regard to parent-child relational objects.

**In regard to claims 18 and 20**, Column 5, lines 19 – 36, describes the QSTRETCH module of the invention as including stretch, flex, and yield deformation capabilities as determined by motion vectors. Column 12, lines 63 – 67, and Column 13, lines 1 – 4, describe lengthening an object in a first dimension and shortening the object in a second dimension. Column 14, lines 13 – 21, describe shortening an object in a first dimension and lengthening the object in a second dimension. These lengthening and shortening functions are additionally described as being controlled by the linear motion offset, sensitivity factor, and whether or not the volume is to be kept constant. Figure 6B shows a setup dialog box in which a user sets parameters to determine the deformation of one or more selected graphic objects. Therefore, the user is able to

select from a group of lengthening and shortening functions in both a first and second dimension for a three-dimensional object by manipulating the parameters of the deformation. Additionally, Column 8, lines 20 – 22, describes element 118 of Figure 6B as indicating to a user the selected volume preservation value as one of keeping the volume of an object constant or allowing a free volume option. "The stretch effect can be set to a Keep Volume Constant option in a text box 118, or alternatively, can be set to a Free Volume option." Thus, the graphical user interface comprises a display portion configured to display a currently selected volume preservation value.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claims 4 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,731,819 to Gagné et al. in view of Weiley et al.**

**Regarding Claims 4 and 13**, Gagné et al. does not state that the volume of the modified objects is less than the volume of the original objects in response to a volume preservation factor being less than full volume preservation. Gagné et al does teach, however, that while performing a stretch effect on an object, a Free Volume option may be selected rather than a Keep Volume Constant option. Additionally, it is well known in the art of graphics animation to modify an object such that the modified volume of the object is less than its previous static volume while retaining the object's shape in order to simulate movement away from an observer's view. This is done so as to give the visual effect of the object being farther away and thus having a smaller displayed size than if the object were near. As stated in Weiley et al. while describing visual clues for discerning 3D qualities on 2D displays, "The size of the image on the retina is a strong clue, if (as is nearly always the case) the object is familiar. If the image of car 'a' on the retina is larger than the image of car 'b' then we know car 'a' is closer." Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the invention of Gagné et al. to include decreasing the size of the modified object and thus its volume as well in response to selecting a Free Volume option to simulate motion of the object away from an observer's view as taught by Weiley et al. One would have been motivated to make such a modification to the invention of Gagné et al. so that a user may be able to change the size and volume of

an object to simulate three-dimensional motion of an object away from an observer on a two-dimensional display while retaining the object's overall shape and appearance.

***Response to Arguments***

Applicant's arguments filed 12/5/2005 have been fully considered but they are not persuasive. The reference teaches about the selective deformation of an object without deforming the parent object that corresponds to the claimed limitation of determining a constraint to a third object without applying the same constraint to the first and the second object.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Supratik Chakraborty whose telephone number is (571) 272-7662. The examiner can normally be reached on Monday - Friday (7:30 am - 3:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on (571) 272-7782. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sc

S.Chakraborty 3/28/06

ULKA CHAUHAN
SUPERVISORY PATENT EXAMINER